

TRIPLE GATE DEVICE HAVING STRAINED-SILICON CHANNEL

Abstract

A three-dimensional Triple-Gate (Tri-gate) device having a three-sided strained silicon channel and superior drive current is provided. The Tri-gate device includes a composite fin structure consisting of a silicon germanium core and a three-sided strained silicon epitaxy layer grown from surface of said silicon germanium core. A gate strip wraps a channel portion of the composite fin structure. Two distal end portions of the composite fin structure not covered by the gate strip constitute source/drain regions of the Tri-gate device. A high quality gate insulating layer is interposed between the composite fin structure and the gate strip.